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UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)*(Only for new nonprovisional applications under 37 CFR 1.53(b))*Docket No.
13668(YOR9-2000-0348US1)Total Pages in this Submission
3**TO THE ASSISTANT COMMISSIONER FOR PATENTS**Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

VIDEO ON DEMAND CONFIGURING, CONTROLLING AND MAINTAINING

and invented by:

Louis Paul Herzberg
Charles Steven LingafeltJCS30 U.S. PTO
09/590203
06/08/00**If a CONTINUATION APPLICATION, check appropriate box and supply the requisite information:**☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 37 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications *(if applicable)*
 - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
 - d. ☐ Reference to Microfiche Appendix *(if applicable)*
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings *(if drawings filed)*
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

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3

Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*

a. ☒ Formal Number of Sheets **15**

b. ☐ Informal Number of Sheets _____

4. ☒ Oath or Declaration

a. ☒ Newly executed *(original or copy)* ☐ Unexecuted

b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*

c. ☒ With Power of Attorney ☐ Without Power of Attorney

d. ☐ DELETION OF INVENTOR(S)

Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).

5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*

The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ☐ Computer Program in Microfiche *(Appendix)*

7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*

a. ☐ Paper Copy

b. ☐ Computer Readable Copy *(identical to computer copy)*

c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers *(cover sheet & document(s))*

9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*

10. ☐ English Translation Document *(if applicable)*

11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations

12. ☒ Preliminary Amendment

13. ☒ Acknowledgment postcard

14. ☒ Certificate of Mailing

☐ First Class ☒ Express Mail *(Specify Label No.):* **EL286464940US**

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Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)

16. ☒ Additional Enclosures (please identify below):


Associate Power of Attorney

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	34	- 20 =	14	x \$18.00	\$252.00
Indep. Claims	6	- 3 =	3	x \$78.00	\$234.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$690.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$1,176.00

- ☐ A check in the amount of _____ to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **50-0510/IBM** as described below. A duplicate copy of this sheet is enclosed.
- ☒ Charge the amount of **\$1,176.00** as filing fee.
 - ☒ Credit any overpayment.
 - ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
 - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).


Richard L. Catania
Registration No. 32,608

Dated: June 8, 2000

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza
Garden City, New York 11530
(516)742-4343

cc:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	<th>TW</th> <th>TX</th> <th>TY</th> <th>TZ</th> <th>UA</th> <th>UB</th> <th>UC</th> <th>UD</th> <th>UE</th> <th>UF</th> <th>UG</th> <th>UH</th> <th>UI</th> <th>UJ</th> <th>UK</th> <th>UL</th> <th>UM</th> <th>UN</th> <th>UO</th> <th>UP</th> <th>UQ</th> <th>UR</th> <th>US</th> <th>UT</th> <th>UU</th> <th>UV</th> <th>UW</th> <th>UX</th> <th>UY</th> <th>UZ</th> <th>VA</th> <th>VB</th> <th>VC</th> <th>VD</th> <th>VE</th> <th>VF</th> <th>VG</th> <th>VH</th> <th>VI</th> <th>VJ</th> <th>VK</th> <th>VL</th> <th>VM</th> <th>VN</th> <th>VO</th> <th>VP</th> <th>VQ</th> <th>VR</th> <th>VS</th> <th>VT</th> <th>VU</th> <th>VV</th> <th>VW</th> <th>VX</th> <th>VY</th> <th>VZ</th> <th>WA</th> <th>WB</th> <th>WC</th> <th>WD</th> <th>WE</th> <th>WF</th> <th>WG</th> <th>WH</th> <th>WI</th> <th>WJ</th> <th>WK</th> <th>WL</th> <th>WM</th> <th>WN</th> <th>WO</th> <th>WP</th> <th>WQ</th> <th>WR</th> <th>WS</th> <th>WT</th> <th>WU</th> <th>WV</th> <th>WW</th> <th>WX</th> <th>WY</th> <th>WZ</th> <th>XA</th> <th>XB</th> <th>XC</th> <th>XD</th> <th>XE</th> <th>XF</th> <th>XG</th> <th>XH</th> <th>XI</th> <th>XJ</th> <th>XK</th> <th>XL</th> <th>XM</th> <th>XN</th> <th>XO</th> <th>XP</th> <th>XQ</th> <th>XR</th> <th>XS</th> <th>XT</th> <th>XU</th> <th>XV</th> <th>XW</th> <th>XX</th> <th>XY</th> <th>XZ</th> <th>YA</th> <th>YB</th> <th>YC</th> <th>YD</th> <th>YE</th> <th>YF</th> <th>YG</th> <th>YH</th> <th>YI</th> <th>YJ</th> <th>YK</th> <th>YL</th> <th>YM</th> <th>YN</th> <th>YO</th> <th>YP</th> <th>YQ</th> <th>YR</th> <th>YS</th> <th>YT</th> <th>YU</th> <th>YV</th> <th>YW</th> <th>YX</th> <th>YY</th> <th>YZ</th> <th>ZA</th> <th>ZB</th> <th>ZC</th>	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC
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Applicant(s): Louis P. Herzberg, **Examiner:** Unassigned
et al.

Art Unit: Unassigned

Docket: 13668 (YOR9-2000-0348US1)

For: VIDEO ON DEMAND CONFIGURING, **Dated:** June 8, 2000
CONTROLLING AND MAINTAINING

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Please amend the subject patent application as follows.

Page 16, line 14, change "suing" to --using--.

Page 16, line 24, change "tow" to --row--.

Page 19, line 15, change "t" to --to--.

"Express Mail" Mailing Label Number: EL286464940US
Date of Deposit: June 8, 2000


I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231.

John S. Sensny

REMARKS

This opportunity is being taken to correct minor informalities in the specification. If the Examiner believes that a telephone conference with Applicant's attorney would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Respectfully submitted,


John S. Sensny
Registration No. 28,757

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza
Garden City, New York 11530
(516) 742-4343

JSS/gc

VIDEO ON DEMAND CONFIGURING,
CONTROLLING AND MAINTAINING

CROSS REFERENCE

5

This application claims priority from U.S. Provisional
Application No. 60/138,172, filed on June 8, 1999.

10

This application is also related to the following
copending applications, filed herewith,

15

Serial No._____, "Control And Maintenance Of
Multicast Distribution Employing Embedded Displays,"
(Attorney Docket YOR9-1999-0272);

20

Serial No._____, "Controlling, Configuring,
Storing, Monitoring And Maintaining Accounting Or
Bookkeeping Information Employing Trees With Nodes Having
Embedded Information," (Attorney Docket YOR9-2000-0346);

25

Serial No._____, "Method Of Control, Maintenance
And Allocation Of Computer Server Farms Resources And
Other Resource Farms To Their Users," (Attorney Docket
YOR9-2000-0347):

30

Serial No._____, "Doing Business Employing
Linked Trees Having Retrievable Embedded Information,"
(Attorney Docket YOR9-2000-0366);

which are all incorporated herein by reference in
entirety.

YOR9-2000-0348US1

This application is also cross referenced with copending application no. 09/327,708, entitled, "Representing, Configuring, Administering, Monitoring, and/or Modeling Connections Using Catalogs and Matrixes," by E.H. Booth et al., filed June 8, 1999, the disclosure of which is incorporated herein by reference in entirety;

The disclosure of this application is related to the disclosures of the following U.S. Patents:

U.S. Patent No. 5,289,460, "Maintenance of Message Distribution Trees in a Communications Network," by Drake, Jr. et al., issued February 22, 1994;

U.S. Patent No. 5,724,646, "Fixed video-on-demand," by A. Ganek et al., issued March 3, 1998;

U.S. Patent No. 5,682,597, "Hybrid Video-on-demand Based on a Near-video-on-demand System," by A. Ganek et al., issued October 28, 1997;

U.S. Patent No. 5,459,725, "Reliable Multicasting over Spanning Trees in Packet Communications Networks," by Bodner, R.A. et al., issued October 17, 1995;

U.S. Patent No. 4,277,837, "Personal Portable Terminal for Financial Transactions," by Stuckert, P.E., issued July 7, 1981;

U.S. Patent No. 4,106,667, "Apparatus and Method for Conducting Financial Transactions," by Lynott, J.J., issued August 15, 1978;

5 which are all incorporated herein by reference in entirety.

Background Of The Invention

10 This invention generally relates to video-on-demand; and more specifically, the invention relates to monitoring various aspects of video-on-demand services.

15 Video-on-demand (VOD) is a service system in which customers or subscribers are able to choose interactively various programs stored in a video source and can view a selected program at any time, instead of only receiving predetermined television programs from broadcasting stations. The VOD users are normally able to operate the
20 selected programs in the same way they are able to use a video cassette recorder, including replay, rewinding, pause and recording of the served video programs. In addition, numerous video and audio services such as video games, video conferencing and home shopping can be
25 offered to the users of the VOD service system.

Developing provision of a large assortment of video and other multimedia presentations in video-on-demand, VOD, and presentation-on-demand, POD, to large groups of
30 viewers requires control, monitoring and maintenance of many different facets of the provision. This includes

obtaining, updating, storing, deleting and/or archiving
the presentations; providing connectivity assets for
provision of each requested presentation (this includes:
[multiple] channel identification; and dividing and
5 subdividing primary, secondary and tertiary servers at
regional [central] offices to efficiently provide each
presentation to a particular group of users in its
regions in satisfying each users particular time to view
the particular presentation. Other important facets of
10 VOD include receiving, routing, and combining user
requests; monitoring each user's usage for cost
determination and billing; and determine the
healthfulness of all facets of the provision, etc.

15 Summary Of The Invention

An aspect of this invention is to use a tree
representation to represent and to monitor various
aspects of a video on demand service system.

20 Another aspect of the present invention is to form
catalogs to represent one or more distribution aspects of
video on demand service systems, and to use those
catalogs to form displays that illustrate information
25 about the distributions.

These and other aspects are attained with a method and
system for providing multilevel information about video-
on-demand services. The method comprises the steps of
30 generating a display, on a computer display screen, of a
tree having a plurality of nodes; and embedding in the

nodes information about video-on-demand services.
Preferably information is embedded in these nodes in the
form of matrices.

5 A wide range of information about the video-on-demand
service may be embedded in the display. For instance,
information may be embedded about usage patterns between
the supplier of the video services and the consumer, a
list of users, user statistics, satisfaction rates,
10 failure rates, failure causes, rates of view to
completion, cost monitor information, customer payment
information, menus of videos, charge variations, special
features and offers, user age, user education, geography,
and any combination of the above.

15 Further benefits and advantages of the invention will
become apparent from a consideration of the following
detailed description, given with reference to the
accompanying drawings, which specify and show preferred
20 embodiments of the invention.

Brief Description Of The Drawings

25 Figure 1A shows a distribution over a provider's network
elements.

Figure 1B shows a distribution of users in a mess
configuration.

30 Figure 1C shows a distribution of servers having an
assortment of presentation elements

Figure 2 illustrates an example of a High-level flow of method;

Figure 3 shows a matrix with Catalog "123" versus Catalog "ABC" with one connection identified;

Figure 4 shows a matrix with multiple connections at the same intersection identified;

Figure 5 show an expansion of a Catalog Element;

Figure 6 shows an expansion of a Catalog Element that is in itself a Catalog;

Figure 7 shows an example of input/output block for a connection identified by the intersection of catalog elements;

Figure 8 shows an example of steps for configuring a network;

Figure 9 shows an example of steps for changing a connection;

Figure 10 shows an example of a matrix of connections showing possible monitoring method;

Figures 11A and 11B show examples of a matrix of connections showing possible problem determination and tuning method;

Figure 12 shows an example of steps for modeling a network.

Detailed Description Of The Preferred Embodiments

5

The complex presentation provisions of video on demand and presentation-on-demand, with desirable connection, usage, control and maintenance requirements can be advantageously handled, configured, administered and monitored employing a tree representation. This tree is herein referred to as a 'usage' tree. The usage tree representation is performed with particular novelties satisfying the particularities of multimedia presentation VOD delivery requirements.

15

The trees may be shown bottom up (extending upward from the root node); and trees may similarly be formed and/or displayed top down (extending downward from the root node), sideways (from the root node) or in any combination of these (as known to those skilled in the art). The particular tree formation and/or display is formed as is best suited to the particular application and/or display, and in accordance with the desire of a viewer or user. In some embodiments these display variations are selectable by the user. When more than one tree is displayed (e.g. in a split screen utilization), each tree may be formed and/or displayed in a different form/shape.

30

Figures 1A and 1B show two of these facets, more specifically, Figure 1A shows a distribution over the

provider's network elements for its area of coverage. Figure 1B shows a distribution of users in these areas of coverage in a mess configuration. Alternatively a star or ring configuration may be used. Figure 1C shows a distribution of servers having an assortment of presentation elements. Similar distributions are assumed for other facets of the provider's provision. In accordance with the present invention, catalogs are formed to represent one or more of these distributions, as shown in Figure 2.

Generally, with the procedure outlined in Figure 3, at step 210, a catalog is formed; and at step 220, a matrix is created from the catalog. Step 230 is to form connections to satisfy requests. More specifically, as represented at 240, connection requests are satisfied. As represented by 250, 260 and 270, a determination may be made of any problems, channels may be assigned, and desired or appropriate modeling may be performed.

Each of these distribution is advantageously formed and controlled using catalogs of distribution endpoints as shown in Figure 3. This is an example of the presentation elements distribution. Each (123) endpoint corresponds to a particular presentation, and each 'ABC' endpoint corresponds to one or more channel number that is used to provide each particular endpoint. Thus, in a single fixed time provision, only one channel needs to be provided. In a video-on-demand type of provision, several channels are used to provide different segments

of the particular presentation. Sometimes these segments are offset in time from another.

5 It should be noted that, each particular presentation need not be actually resident at its specific endpoint, but in many cases the presentation is forwarded from one region to the others as user demand requires. Also, each server at each user region may generally store a subset of the provider's total presentation library. In
10 addition, preferably, servers share their assets, and servers share presentation demand loads when user regions are not balanced.

15 These types of utilization's are stored in connections background information levels, as shown in Figure 4. Each background level give information regarding a different facet of the provision specific to the distribution to which it is related.

20 Information may be displayed to show one distribution offset, on top of, or to a side of another distribution. The displays indicate information about the distribution in different ways. For instance, the color and/or color intensity is used to show the number of users requesting
25 and/or receiving a particular distribution.

30 A matrix method may also be used to display the relationship between users and presentations. In Figure 3, each element of the "123" catalog of endpoints corresponds to a particular presentation, and each element of the "ABC" catalog of endpoints corresponds to

a user or consumer of the presentation. The intersection between elements of the catalogs represents a presentation which the user is receiving. The user ("ABC" catalog element) may have an attribute that specifies which channel(s)/connection paths the element is capable of receiving. The intersection could also contain information about which channel is being used to move the presentation to the endpoint.

This matrix method may also be used to display the relationship between primary servers and secondary servers. In Figure 3, each element in the "123" catalog of endpoints corresponds to a particular primary server or set of servers, and each element in the "ABC" catalog of endpoints corresponds to a particular secondary server or a set of secondary servers. The intersection between elements of the catalogs represents logical connection(s) of a presentation flowing from the primary server to a secondary server. Further, as shown in Figure 4, if multiple presentations are flowing between a primary and a secondary server, the multiple logical connections of the multiple presentations flowing from the primary server to the secondary server can be represented by a 3D-like stack of blocks, with each block representing a different connection/presentation. Further, the "ABC" catalog of secondary servers could be a catalog of user endpoints.

Figure 5 shows a case which uses matrix, 300, when the user selects ("clicks on") a catalog axis element, 510.

In this situation, information about the constitution of the catalog element is displayed, 520.

5 This approach is extended to elements of a catalog that are in and of themselves a catalog. In this situation catalog/elements are embedded within other catalog/elements. Figure 6, shows a case using matrix 300, wherein one selects element, 510, and obtains that which constitutes this element, 520. Now, when one
10 selects ("clicks on") Subnet 10, in 520, a sub-catalog 630 is displayed. Sub-catalog 630 is a list of network elements within Subnet 10. Now, when one selects ("clicks on") one of the network elements of catalog 630, one is shown a sub-catalog, 640. In this case, sub-catalog 640 is a list of applications executing on that
15 network element. Since, in general, network elements are not limited to traditional network equipment, but may also include hosts and clients, representation of additional relevant information is possible. For
20 example, one could further select (click-on) one of the applications and be shown a catalog, 650, (a list) of users of that application. Furthermore, one could select (click-on) a user and view usage statistics about that user. This process can continue to show more and more
25 embedded information regarding a connection.

Now we consider an example of an initial configuration. It is noted that details of this step are generally implementation dependent and may also vary with the
30 network type. Figure 7 shows a way to configure connectivity between two endpoints. In this simplified

example, it is assumed that a user is trying to configure an IPsec based VPN and must specify the type of tunnel, the type of QoS and the user of the tunnel. The network administrator displays the catalogs of interest along the edges of the matrix, 300, and selects (clicks on) an intersection of endpoints within the matrix. This brings up, 710, which is a set of catalogs or lists which offer the connectivity attributes that can be or should be set or a wizard to aid in the choices of appropriate values for the attributes.

For illustration simplicity and clarity, the concept of multiple connections between the same endpoints as noted above is not shown in the following illustrations.

In one embodiment, the steps for configuring are as shown in figure 8.

Step 1. Select Logical Connection by "clicking on" or selecting an intersection point 810. This brings up a "selection box" that contains fields for the pertinent information.

[Thus, in the example of Figure 7, each direction 711, 712, is configurable separately so as to give meaning to the From, 715, and To, 716, fields. It is assumed that the catalogs of tunnel types 713, QoS types 714, and potential tunnel users have been previously populated. The question marks 720 indicate fields that when selected, a "wizard" or catalog of possible values is displayed. for example, a wizard is displayed when the

catalog of values is not complete or to help in selecting the value from a catalog.]

5 Step 2. For each field, select a value from a catalog of possible values, 820.

10 Step 3. After selecting values for all fields, the user has completed the configuration for the connection between the two end points and the configuration is stored for retrieval and/or display as desired, 830.

15 It is noted that all examples are only representative illustrations of the invention, and are not comprehensive enumeration of the fields that must be completed for configuration in a particular embodiment.

20 An embodiment for changing configuration is shown in Figure 9. The same concept used for initial configuration is used for modifying an existing configuration. The steps are as follows:

25 Step 1. Given a connection exists between two end points as shown by the intersection of an element from two matrix displayed catalogs, the user selects that connection from the matrix intersection that represents the connection, 910.

30 Step 2. Given the matrix intersection connection selection, the user changes the attributes of the connection by "clicking-on" that selection, 920. This brings up a selection block that contains changeable

information. For example, this may be the same selection
block that was used to configure field which results in
the display of a catalog whose elements could be used in
the field, or a wizard may become available to configure
the field.

Because the elements that form axis of the matrix can be
catalogs in and of themselves, a matrix intersection
cells can represent a catalog of connections. This
catalog of connections can operate in a way similar to
the way shown in Figure 6. For example, assume a highest
level catalog is named *east coast*. It includes elements
which are in and of themselves catalogs, namely: *Miami*,
Atlanta, *Durham*, and *Hawthorn*. Each of these includes
elements which are in and of themselves catalogs. The
Miami catalog has included elements, namely: *router 1*,
router 2, *router 3*. Each of these included elements are
catalogs that contain other included elements. Thus,
router 1 catalog contains elements *interface 1*, *subnet*
w.x.y.z., *specific IP address a.b.c.d.* and so on.

The phenomenon of embedding intersections within other
intersections may continue as needed by the particular
application and network. Thus one could begin with a 1x1
matrix of *each coast* verses *east coast*, which only has a
single intersection cell, generates an expanded
"submatrix" whose both axes contain cities, namely:
Miami, *Atlanta*, *Durham*, *Hawthorn*. Selecting the
intersection, *Miami* verses *Miami*, generates an expanded
submatrix whose axis contains a list of routers, namely:
router 1, *router 2*, *router 3*. Further, selecting the

intersection, *router 1* versus *router 1*, generates an expanded submatrix whose axis contains network components, namely: *interface 1*, *subnet w.x.y.z.*, *specific IP address a.b.c.d.* One could then select any
5 of these network component intersections, say *interface 1* verses *subnet w.x.y.z.* This intersection represents this particular connection of the many possible within the network. This operation is herein referred to as matrix expansion. Matrix expansion is used to satisfy the needs
10 of the particular application and/or user. It allows the systematic selection and display of any of the available levels of embedded intersection cells.

The concept of "matrix abstraction" may be employed with
15 significant benefits in accordance with the present invention. This is because the matrix intersection of catalogs of catalogs represent a catalog of connections, one can abstract very large configurations and display these configurations by displaying the topmost catalog.
20 The matrix representation of the topmost catalog is said to be abstracted from the main or total network matrix. Consider the case when a highest level catalog name *east coast* contains four elements. These four elements are in and of themselves sub-catalogs of cities, namely: *Miami*,
25 *Atlanta*, *Durham*, *Hawthorn*. Assume that each of these cities have three elements. These three elements each further contain 3 elements which are in and of themselves sub-catalogs.

[For example, the *Miami* catalog contains elements which are router sub-catalogs, namely: *router 1*, *router 2*, *router 3*;

5 each of these router sub-catalogs contain 3 network elements, e.g. the *router 1* catalog contains network elements, namely: *interface 1*, *subnet w.x.y.z.*, *specific IP address a.b.c.d.*]

10 Then the total number of elements represented by the top-level catalog is $4 \times 3 \times 3 = 36$ elements. This has a total of 1296 (36×36) connection possibilities which may be displayed in a systematic manner using the representation of the present invention. All of these result from the
15 single cell 1×1 matrix of *east coast* verses *east coast* as the specified starting point. Thus, because a user can arbitrarily form catalogs, which can also be catalogs of catalogs, the user can abstract the connections to any level desired in accordance with the present invention.

20 A further benefit of the representation of the present invention is the concept of matrix inheritance. As noted, making use of the abstraction property, one defines a matrix with a row of one or more catalogs
25 versus a column of one or more catalogs. Generally, one or more of the catalogs includes elements that are in and of themselves sub-catalogs. The concept of inheritance provides the ability of propagating an inheritable action and/or attribute to an entire inheritance group. In one
30 embodiment this is accomplished just by performing, adjusting or setting that action/attribute at a group

parent. In alternate embodiments the action/attribute is inherited by performing, adjusting or setting that action/attribute at any group member. Thus, when an action (e.g. a parameter) is done at a intersection cell, the action is inherited by all elements of all the sub-catalogs of catalogs in the entire inheritance group.

For instance, if the highest level catalog, named *east coast*, contains 4 elements which are in and of themselves sub-catalogs, (named: *Miami*, *Atlanta*, *Durham*, *Hawthorn*), and each of these contains 3 elements which are in and of themselves sub-catalogs, (e.g., the *Miami* catalog contains *router 1*, *router 2*, *router 3*), and each of these contains 3 elements, (e.g. the *router 1* catalog contains elements *interface 1*, *subnet w.x.y.z*, *IP address a.b.c.d*) and a 1x1 matrix of *east coast* versus *east coast* was specified, any action done to the intersection formed by the 1x1 (single-cell) matrix (being the group parent) is reflected into all the 1296 connections included within that single matrix cell.

In accordance with the present invention, the matrix display concept can be used in the context of monitoring of all or some connections. Given that the intersections in the matrix can indicate connections, one can display many dynamic parameters of elements, connections and/or catalogs with the use of colors or symbols. As an illustration, one embodiment uses the following color scheme, applied at the intersection point of elements in the matrix catalogs, to display status about connections between elements in the catalogs:

Black - connection is not currently configured;
Yellow - connection is configured, but not currently
enabled;
Green - connection is configured, enabled and operating
correctly;
Red - connection is configured and enabled but not
operating correctly (e.g. QoS not being maintained); and
Flashing Red with sound - connection has a serious
problem, e.g. a potential security violation such as
hacker attempting to insert traffic into the connection
has been detected.

The different types for "monitoring" information that can
be displayed is large and limited only by imagination of
the implementor. Other examples include performance or
loading information, i.e. yellow - no traffic observed in
last observation period, green - medium loading, red -
more than 85% utilization, flashing red - excessive
packet loss.

Figure 10 shows a black and white example of displaying
monitored connections using different types of cross
hatched lines for different status items. It shows the
status indicated by the direction of the slash.

1010 (No lines) - no connection configured;

1020 (Grid slashes) - connection configured, but not
enabled;

1030 (Reverse slashes) - connection configured, enabled
and operating correctly;

1040 (Horizontal slashes) - connection configured,
5 enabled but not operating correctly (e.g. QoS not being
maintained);

1050 (Vertical slashes) - hacker attempting to insert
traffic into the connection. A BEEP indicates an audio
10 alarm is sounded.

It is noted that Figure 10 is only an illustration. It
is not a comprehensive enumeration of the information
that can be displayed. Furthermore, the monitoring and
15 displaying functions are not limited to the connection,
but can be extended to the resources that make up the
connection or that constitute the end elements, etc. As
known to those skilled in the art, the concepts of this
invention do not have a dependency on the type of
20 information displayed. For example, it can be dynamic
and/or static, fixed or variable, short form or long
form, continuous or intermittent, etc.

In accordance with the present invention, the connection
25 representation concept is useful among other things, for
identifying and solving network operation problems,
tuning parameters of network elements and/or connections,
and scheduling specific tasks that are triggered by
events in the network or simply initiating them directly.
30 This may include actions or tasks for a connections.
Thus, since intersections in the matrix can indicate

information about connections, one can be provided with an ability to select ("click on") an intersection and initiate an action or tasks.

5 Examples of actions or tasks include:

- Retrieval of additional information/statistics (such as bytes/sec, size of frames, traffic rate ranked by sending address, etc.)
- 10 ● Take action (such as test connectivity between the endpoints, manually refresh the keys, halt traffic, etc.)
- Tuning one or more connections (such as alter the QoS parameters, change the mix of traffic allowed through the connection, alter buffer sized, etc.)
- 15 ● Setting alarms, alerts and/or thresholds to use when monitoring a connection.

An example illustrating a problem determination process is shown in Figure 11. Figure 11 uses the connection matrix, 300. One selects an intersection and brings up a display, 910, that aids in problem determination or tuning. This could include the setting of thresholds, etc.

25 The matrix method may also be used to display the information about usage patterns between the supplier of video service and the consumer. In Figure 11B, the matrix 300, shows the relationship between video suppliers A, B, C,...and consumers of the video stream 1,2,3,... Selecting an intersection item equating to relationship between a supplier and a user, 1040, yields

a display of the viewing patterns of the consumer, 910b.
From this, one can change the mix of commercials (more
sports, less sports, etc.) to that user or set of users.
Note that because of the concept that an element in the
5 matrix can represent a set of users or an individual
user, this same technique can be used to alter the mix of
commercials for groups of viewers.

Additional modifications of the matrices and/or cells or
10 elements satisfy particular video provider requirements,
such as a list of users, user statistics regarding such
things as demand as a function of: user age, education,
geography, viewing time of day, response to
advertisements; demand satisfaction failure rate and
15 failure causes; rate of view to completion; cost
monitoring information, customer payment information;
etc.

Additional modifications to satisfy particular user
20 requirements, such as a list of items user is in the
middle of viewing; menus of videos that are to be dropped
and the date of dropping; charge variations; special
features and offers; statistics regarding groups to whom
the video was shown, including such things as user age,
25 education, geography; etc.

Addition modification of the matrices and/or elements are
dependent on dynamics of customer demands and use. New
and/or different matrixes, elements and node levels are
30 created in response to changes in customer-set in
different geographic areas and as affected by local,

national or international finances and/or occurrences.
(Academy awards; actor in the news; political and/or
social changes; current events; change of season; etc.)

5 An embodiment of the present invention performs modeling
as shown in Figure 12, The figure shows steps for the
matrix display being used as an input method for modeling
tools.

10 Step 1. Using the matrix method described above, 1210,
one defines the network to be modeled, 1220, i.e., define
the resources (endpoints) and the connectivity between
resources;

15 Step 2. Given a matrix of connections, 300, one could
select an intersection, 1230, and define the attributes,
1240, of the connection, i.e., maximum frame size, TCP/IP
window size, etc. One could also define the attributes
of the endpoint, i.e., buffer size, speed, etc.;

20 Step 3. Given the matrix of connections and endpoints and
their capabilities, one could then:

- 25 ● Define a work load to flow through the connection
and/or between endpoints;
● Define the rate of traffic to flow through the
connection; and/or
● Define dynamic embodiments of a flow 1250;

30 Step 4 Run the model 1260; and

Step 5 Display the results 1270.

- One could display results in the same method as one monitors the network (see above).
- One could display results within the matrix or endpoints.

This method describes a way to represent relationships between entities. Given this representation, it then provides a framework to perform actions based on the relationship. The entities are often said to constitute a network of elements. The elements and the network can be quite generic. Examples include:

- computer networks where the elements are communications devices such as routers or firewalls or combinations of devices;

- networks based on any level in a protocol stack, such as applications connectivity at the application layer or MAC (Media Access Control) connectivity at the MAC layer;

An example of an application is the representation of database applications that have connectivity between themselves;

An example of a MAC layer are MAC address domains connected by LAN bridges. Other examples are known to those skilled in the art.

- IP networks where elements are devices that contain an IP protocol stack;

- Switching systems, including data or telephone systems;
- Water systems where the elements are the supply points and the usage points; and

5

- Distribution systems where the elements are warehouses and retail stores.

10 The representation method and framework consists of grouping the elements into catalogs or sets. A catalog is created by standard combinatorial operations that include but are not limited to the following:

- add an element to a catalog;
- 15 ● deleting an element from a catalog;
- change an element in a catalog;
- copy or move an element from another catalog;
- create a catalog that represents the intersection of elements of two or more other catalogs;
- 20 ● create a catalog that represents the union of elements of two or more other catalogs; and
- other element and/or catalog operations known to those skilled in the art.

25 There is generally no restriction on the number or type of elements in a catalog.

Generally, an element in a catalog can be of one of two types:

30

"atomic" element - the element does not contain other elements, or

5 "catalog" element - the element is a catalog of other elements.

10 In the following claims, both types of elements are generically referred to as elements. Thus catalog is a hierarchical grouping construct - a catalog is made up of elements, some of which can themselves be catalogs of other elements, and so on. It is noted that a catalog can contain both "catalog" elements and "atomic" elements with no restriction on the number of either type of elements. In the following, the elements that are
15 members of a catalog that is itself an element within a higher level catalog can be referred to as "sub-elements" of the higher level catalog.

20 Some embodiments provide for any combination of the following capabilities: matrix and/or element expansion; logical set manipulation of catalog elements to form changed and/or new matrices, changed and/or new elements, and/or changed and/or new catalogs; catalog manipulation an/or combination; formation of one or more super-
25 catalogs and/or super-elements representing a catalog of catalogs; display of a plurality of trees and/or portions of trees in a variety of tree formats and shapes; and formation and/or manipulation of sub-catalogs and/or sub-elements from one or more catalogs, matrices and/or
30 elements.

Also, in some embodiments, a tree may have more than one so called root node. The elements/nodes emanating from each of the plurality of roots and 920 may be common and be ultimately connected to each root at any subsequent tree level as appropriate to the application. Thus a particular node may be ultimately connected to a root-A and to a root-B. An example of this occurs when root-A represents corporate division-A and root-B represents corporate division-B, and the node represent the costs of a shared legal department.

While it is apparent that the invention herein disclosed is well calculated to fulfill the embodiments stated above, it will be appreciated that numerous modifications and embodiments may be devised by those skilled in the art, and it is intended that the appended claims cover all such modifications and embodiments as fall within the true spirit and scope of the present invention.

CLAIMS

1 1. A method of providing multilevel information about
2 video-on-demand services, comprising the steps:
3
4 generating a display, on a computer display screen, of a
5 tree having a plurality of nodes; and
6
7 embedding in the nodes information about video-on-demand
8 services.

1 2. A method according to Claim 1, wherein the embedding
2 step includes the steps of:
3
4 identifying in a first catalog each of a group of first
5 aspects of video-on-demand services;
6
7 identifying in a second catalog each of a group of second
8 aspects of video-on-demand services;
9
10 forming a matrix from the first and second groups; and
11
12 embedding the matrix in one of the nodes.

1 3. A method according to Claim 2, wherein the step of
2 identifying in the first catalog includes the step of
3 identifying in the first catalog each of a group of users
4 of the video-on-demand service.

1 4. A method according to Claim 1, wherein the embedding
2 step includes the step of embedding information in the
3 nodes in the form of matrices.

1 5. A method according to Claim 4, wherein the matrices
2 are used to display information about an aspect of video-
3 on-demand service selected from the group comprising:

4
5 usage patterns between the supplier of the video services
6 and the consumer, a list of users, user statistics,
7 satisfaction rates, failure rates, failure causes, rates
8 of view to completion, cost monitor information, customer
9 payment information, menus of videos, charge variations,
10 special features and offers, user age, user education,
11 geography, and any combination of the above.

1 6. A system for providing multilevel information about
2 video-on-demand services, comprising:

3
4 a computer display screen;

5
6 means for generating a display, on the computer display
7 screen, of a tree having a plurality of nodes; and

8
9 means for embedding in the nodes information about video-
10 on-demand services.

1 7. A system according to Claim 6, wherein the embedding
2 means includes:

means for identifying in a first catalog each of a group
of first aspects of video-on-demand services;
means for identifying in a second catalog each of a group
of second aspects of video-on-demand services;
means for forming a matrix from the first and second
groups; and
means for embedding the matrix in one of the nodes.

8. A system according to Claim 7, wherein the means for
identifying in the first catalog includes means for
identifying in the first catalog each of a group of users
of the video-on-demand service.

9. A system according to Claim 6, wherein the embedding
means includes means for embedding information in the
nodes in the form of matrices.

10. A system according to Claim 9, wherein the matrices
are used to display information about an aspect of video-
on-demand service selected from the group comprising:
usage patterns between the supplier of the video services
and the consumer, a list of users, user statistics,
satisfaction rates, failure rates, failure causes, rates
of view to completion, cost monitor information, customer
payment information, menus of videos, charge variations,
special features and offers, user age, user education,
geography, and any combination of the above.

1 11. A program storage device readable by machine,
2 tangibly embodying a program of instructions executable
3 by the machine to perform method steps for providing
4 multilevel information about video-on-demand services,
5 said method steps comprising:

6
7 generating a display, on a computer display screen, of a
8 tree having a plurality of nodes; and

9
10 embedding in the nodes information about video-on-demand
11 services.

1 12. A program storage device according to Claim 11,
2 wherein the embedding step includes the steps of:

3
4 identifying in a first catalog each of a group of first
5 aspects of video-on-demand services;

6
7 identifying in a second catalog each of a group of second
8 aspects of video-on-demand services;

9
10 forming a matrix from the first and second groups; and

11
12 embedding the matrix in one of the nodes.

1 13. A program storage device according to Claim 12,
2 wherein the step of identifying in the first catalog
3 includes the step of identifying in the first catalog
4 each of a group of users of the video-on-demand service.

1 14. A program storage device according to Claim 11,
2 wherein the embedding step includes the step of embedding
3 information in the nodes in the form of matrices.

1 15. A program storage device according to Claim 14,
2 wherein the matrices are used to display information
3 about an aspect of video-on-demand service selected from
4 the group comprising:
5
6 usage patterns between the supplier of the video services
7 and the consumer, a list of users, user statistics,
8 satisfaction rates, failure rates, failure causes, rates
9 of view to completion, cost monitor information, customer
10 payment information, menus of videos, charge variations,
11 special features and offers, user age, user education,
12 geography, and any combination of the above.

1 16. A method as recited in claim 1, wherein the tree is
2 displayed top down.

1 17. An article of manufacture comprising a computer
2 usable medium having computer readable program code means
3 embodied therein for causing provision of multilevel
4 information about relationships between users and items
5 of video-on-demand services, the computer readable
6 program code means in said article of manufacture
7 comprising computer readable program code means for
8 causing a computer to effect the steps of claim 1.

1 18. A method for representing interconnection of a
2 plurality of elements of a video-on-demand system, the
3 method comprising:
4
5 providing a first catalog for a first subset of said
6 elements, and providing a second catalog for a second
7 subset of said elements;
8
9 creating a matrix of connection cells formed by an
10 intersection of a pair of elements, wherein a first
11 element of each pair is taken from the first catalog and
12 a second element of each pair is taken from the second
13 catalog; and
14
15 forming a connection representation for at least a subset
16 of the pairs.

1 19. A method as recited in claim 18, wherein at least one
2 element is a catalog of sub-elements, and the method
3 further comprises the step of including all sub-elements
4 in the matrix.

1 20. A method as recited in claim 18, wherein at least one
2 of the catalogs includes a plurality of sub-catalogs.

1 21. A method as recited in claim 18, wherein at least a
2 portion of one catalog is formed using combinatorial
3 operations upon elements of other catalogs.

1 22. A method as recited in claim 18, further comprising
2 displaying at least one portion of the matrix.

1 23. A method as recited in claim 18, further comprising
2 employing a wizard to form at least a subset of the
3 elements.

1 24. An article of manufacture comprising a computer
2 usable medium having computer readable program code means
3 embodied therein for causing representation of
4 interconnection of a plurality of elements of a
5 video-on-demand system, the computer readable program
6 code means in said article of manufacture comprising
7 computer readable program code means for causing a
8 computer to effect the steps of claim 18.

1 25. An architecture comprising:

2
3 a matrix module forming a video-on-demand information
4 system matrix having at least one matrix row element and
5 at least one matrix column element, an intersection of
6 each said at least one matrix row element with each said
7 at least one matrix column element forming a matrix cell;

8
9 a set of video-on-demand elements, a first subset of said
10 set having a connection requirement with a second subset
11 of said set;

12
13 a first catalog including at least one video-on-demand
14 element forming said at least one matrix row element; and

15
16 a second catalog including at least one video-on-demand
17 element forming said at least one matrix column element,

18 wherein each matrix cell represents a video-on-demand
19 connection between each video-on-demand element of the
20 first catalog and each video-on-demand element of the
21 second catalog to enable systematic cooperation among
22 video-on-demand elements according to a video-on-demand
23 requirement.

1 26. An architecture as recited in claim 25, wherein at
2 least one video-on-demand element is a catalog of
3 video-on-demand sub-elements.

1 27. An architecture as recited in claim 25, wherein at
2 least one video-on-demand element is a catalog of
3 elements only peripherally related to video-on-demand.

1 28. An architecture as recited in claim 27, wherein the
2 catalog of elements only peripherally related to
3 video-on-demand includes an item selected from the group
4 of items including customer habits, customer credit card
5 and/or internet purchases, customer's friends, and
6 customer product data.

1 29. A method of providing multilevel information about a
2 plurality of video-on-demand related entities and
3 resources, comprising the steps:

4
5 generating a display, on a computer display screen, of a
6 tree having a plurality of nodes; and

7
8 embedding in the nodes information about a plurality of
9 video-on-demand related entities and resources.

1 30. A method as recited in claim 29, wherein the
2 plurality of video-on-demand related entities and
3 resources include an entity and/or resource selected
4 from: video-on-demand providers; video-on-demand
5 composers/manufacturers; video-on-demand related sellers;
6 video-on-demand advertisers; video manufacturers; video
7 databases; video renters; and any combination of the
8 above.

1 31. An article of manufacture comprising a computer
2 usable medium having computer readable program code means
3 embodied therein for causing provision of multilevel
4 information about relationships between users and items
5 of a plurality of video-on-demand related entities and
6 resources, the computer readable program code means in
7 said article of manufacture comprising computer readable
8 program code means for causing a computer to effect the
9 steps of claim 30.

1 32. An article of manufacture as recited in claim 31,
2 wherein the video-on-demand resources are holdings of
3 groups of products.

1 33. An article of manufacture as recited in claim 31,
2 wherein the relationships include inventory information.

1 34. A method as recited in claim 1, further comprising
2 implementing at least one process taken from a group of

VIDEO ON DEMAND CONFIGURING,
CONTROLLING AND MAINTAINING

15

ABSTRACT

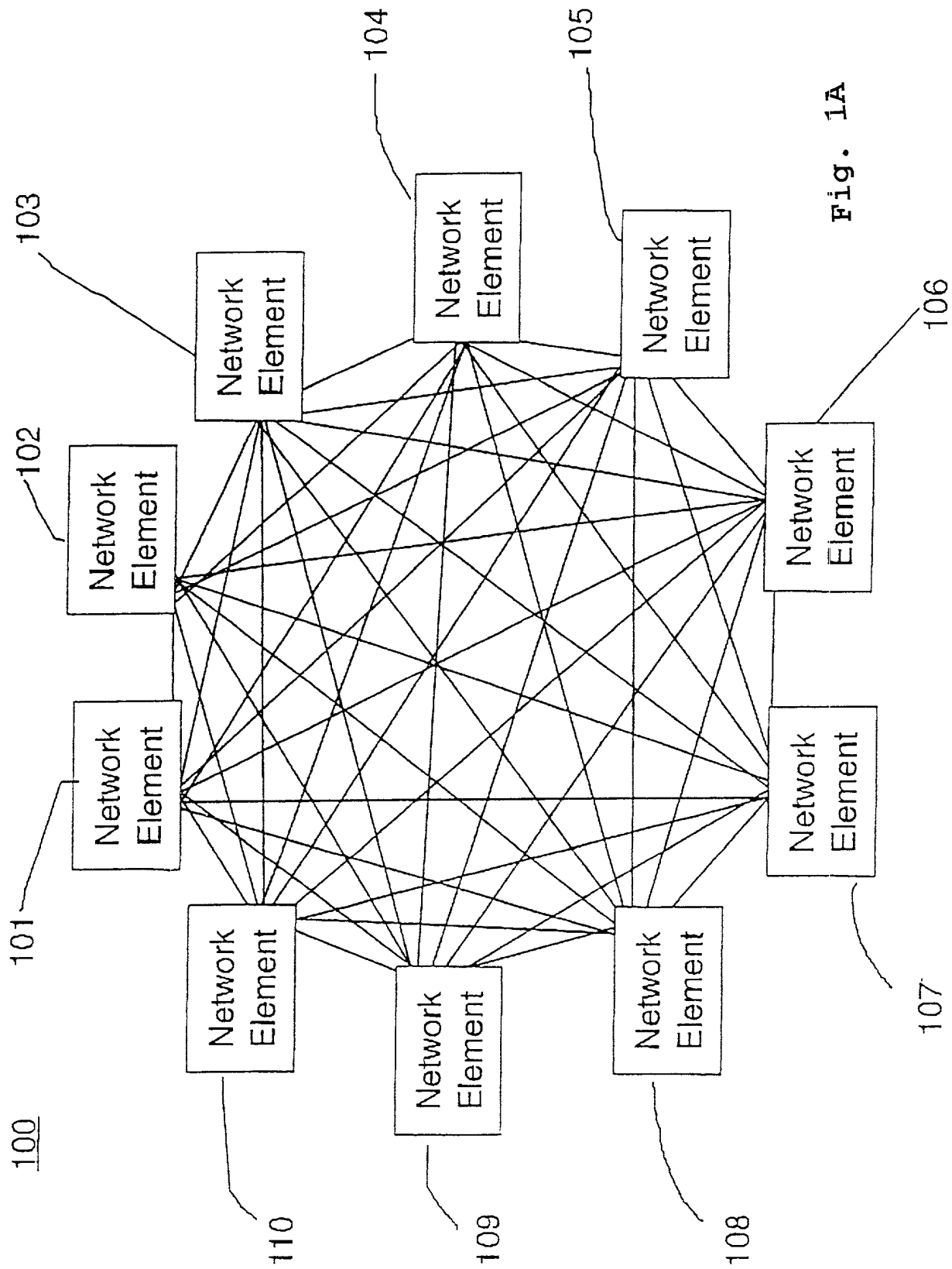
20

25

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35

A method and system for providing multilevel information about video-on-demand services. The method comprises the steps of generating a display, on a computer display screen, of a tree having a plurality of nodes; and embedding in the nodes information about video-on-demand services. Preferably information is embedded in these nodes in the form of matrices. A wide range of information about the video-on-demand service may be embedded in the display. For instance, information may be embedded about usage patterns between the supplier of the video services and the consumer, a list of users, user statistics, satisfaction rates, failure rates, failure causes, rates of view to completion, cost monitor information, customer payment information, menus of videos, charge variations, special features and offers, user age, user education, geography, and any combination of the above.



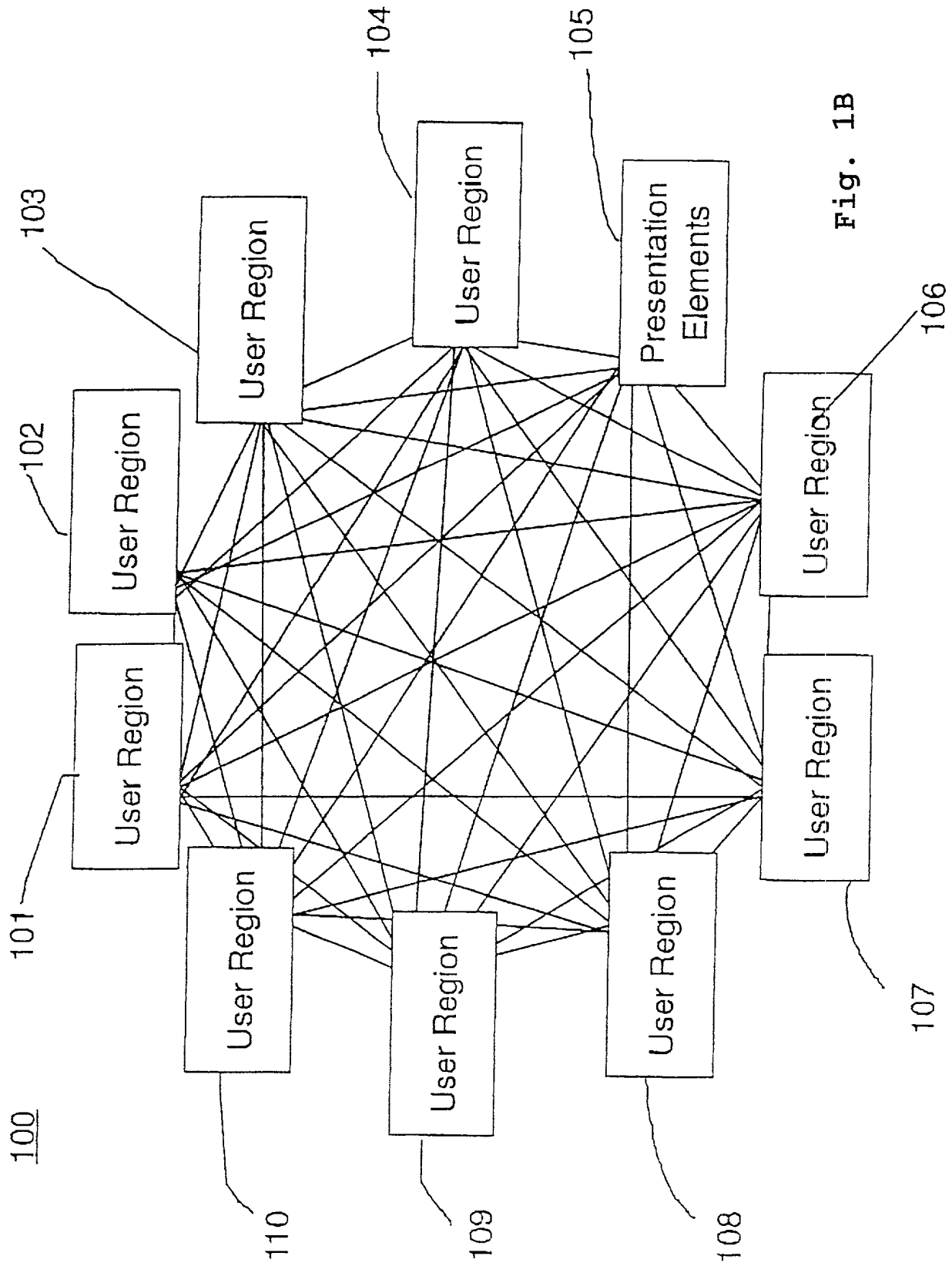


Fig. 1B

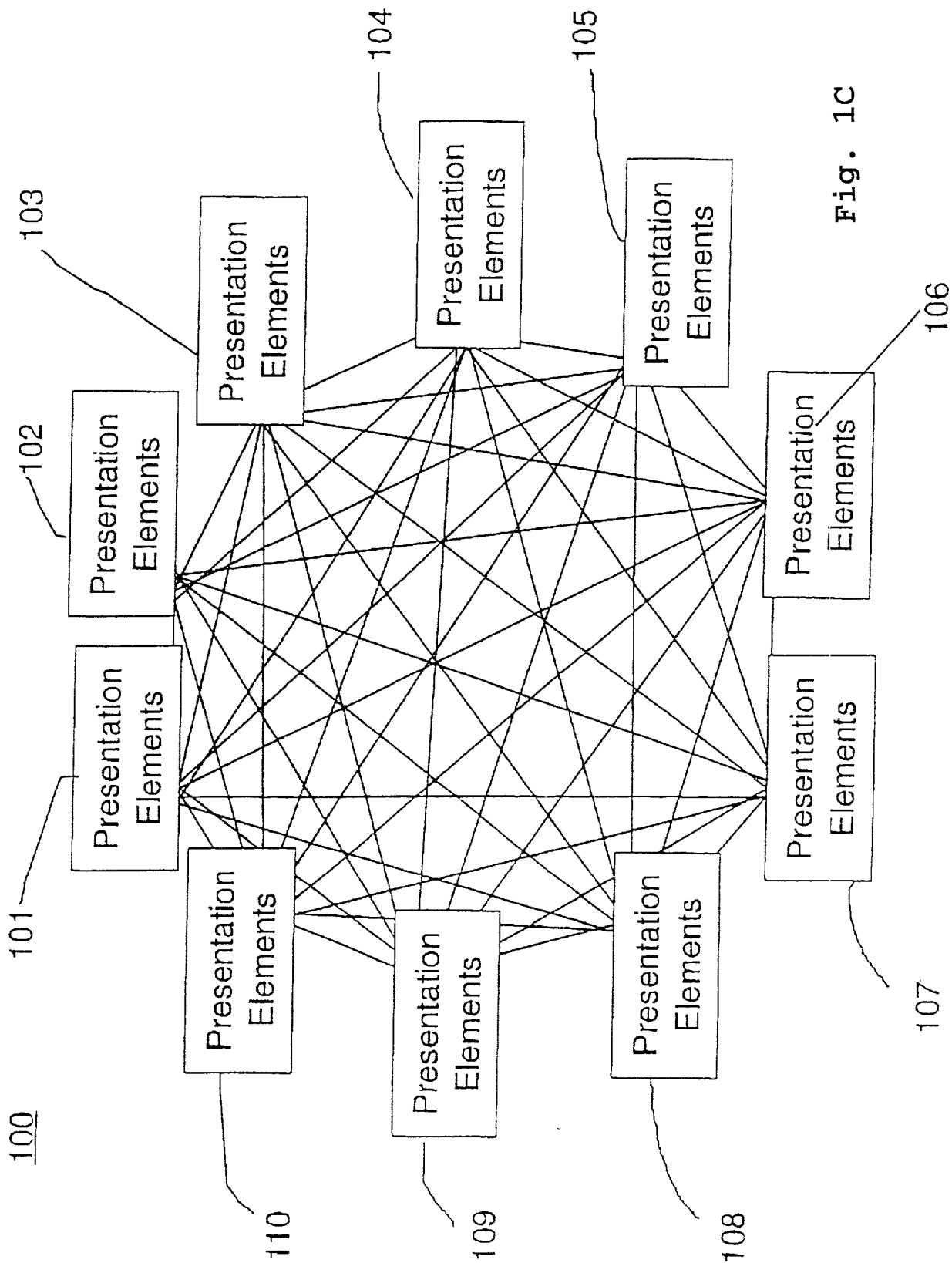


Fig. 1C

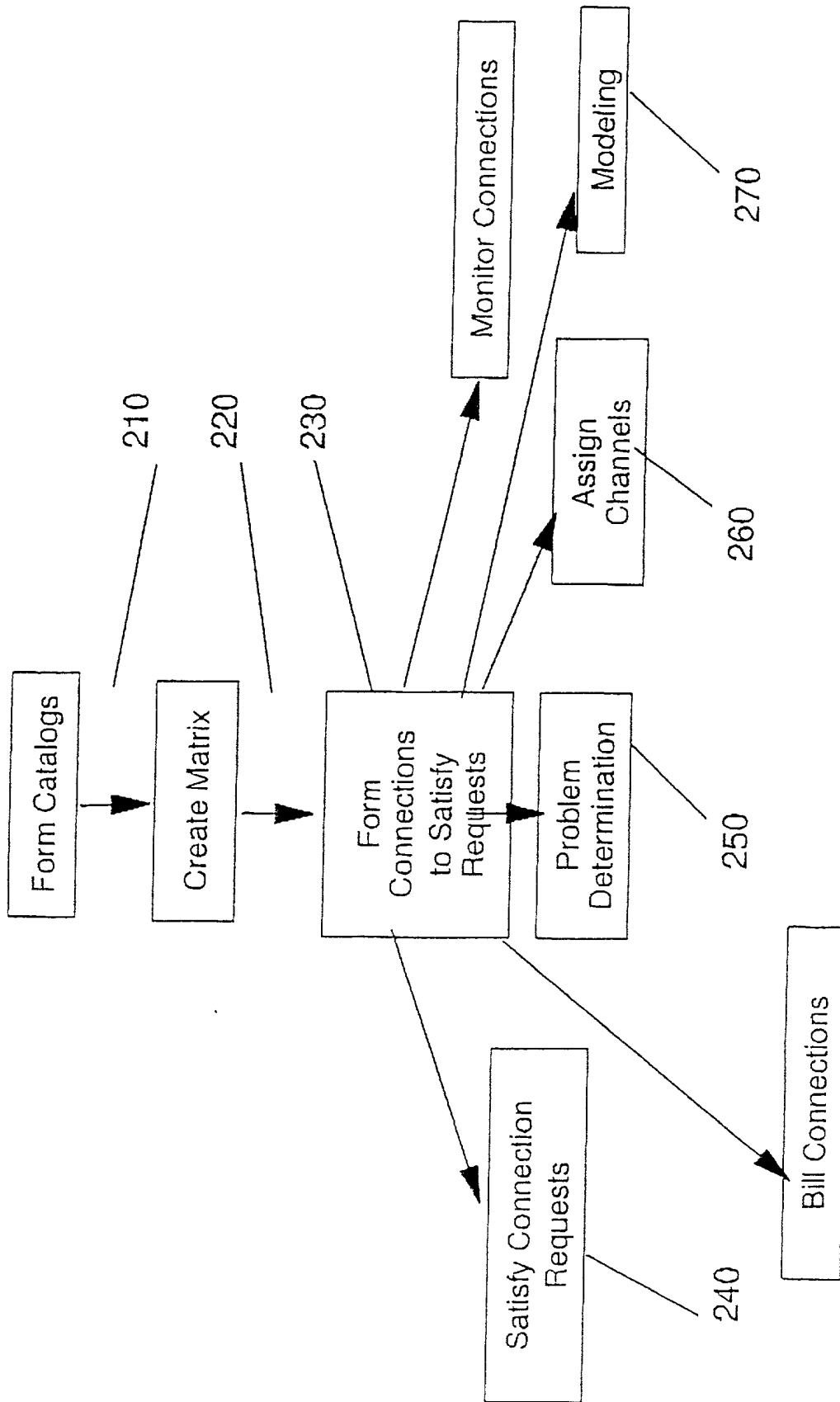


Fig. 2

300

"123" Catalog of Endpoints

	Endpoint 1	Endpoint 2	Endpoint 3	Endpoint 4	Endpoint 5	Endpoint 6	Endpoint 7
Endpoint A							
Endpoint B							
Endpoint C							
Endpoint D				Intersection of Element 4 with Element D			
Endpoint E							
Endpoint F							
Endpoint G							

"ABC"
Catalog
log
of
End-
points

314

Fig. 3

330

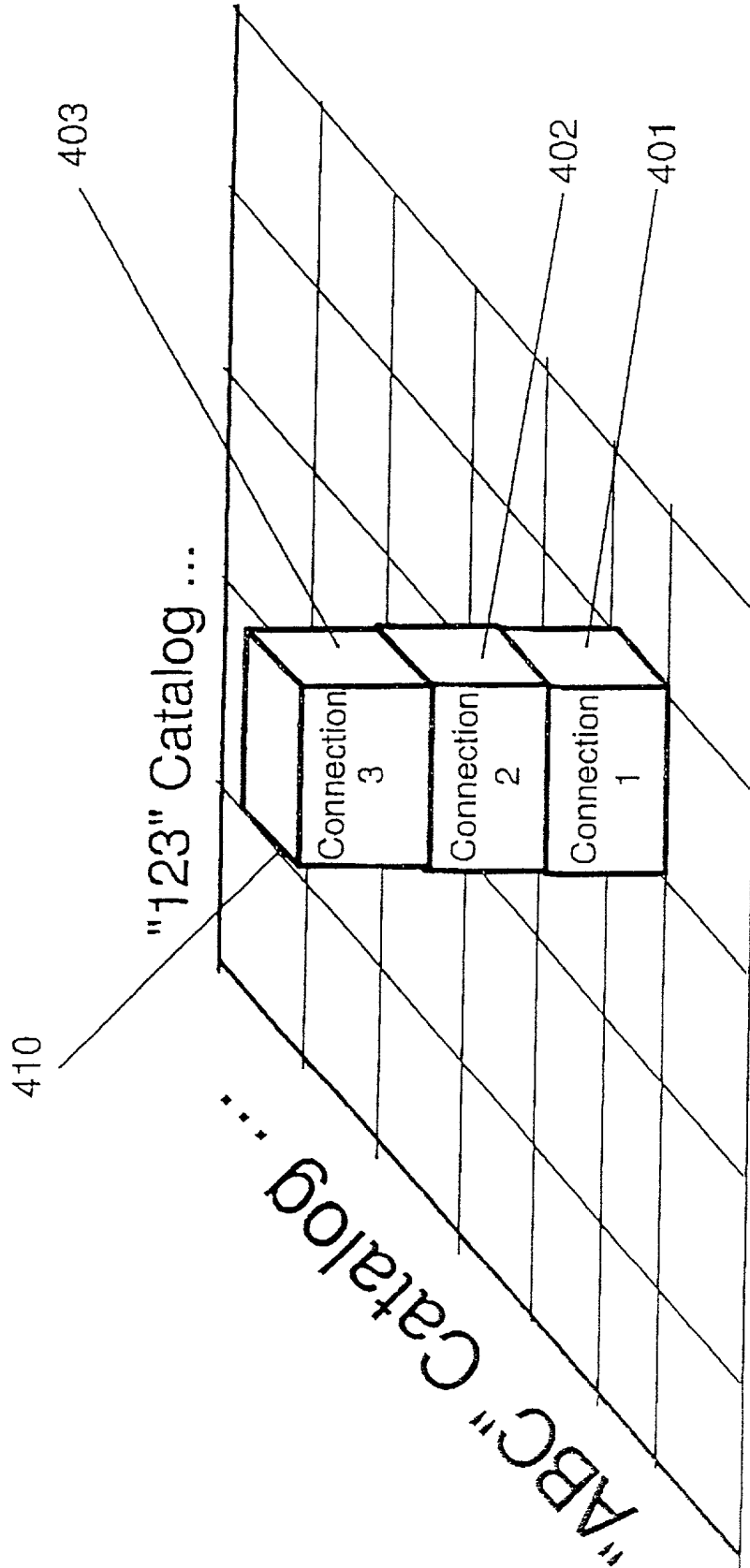


Fig. 4



Fig. 5

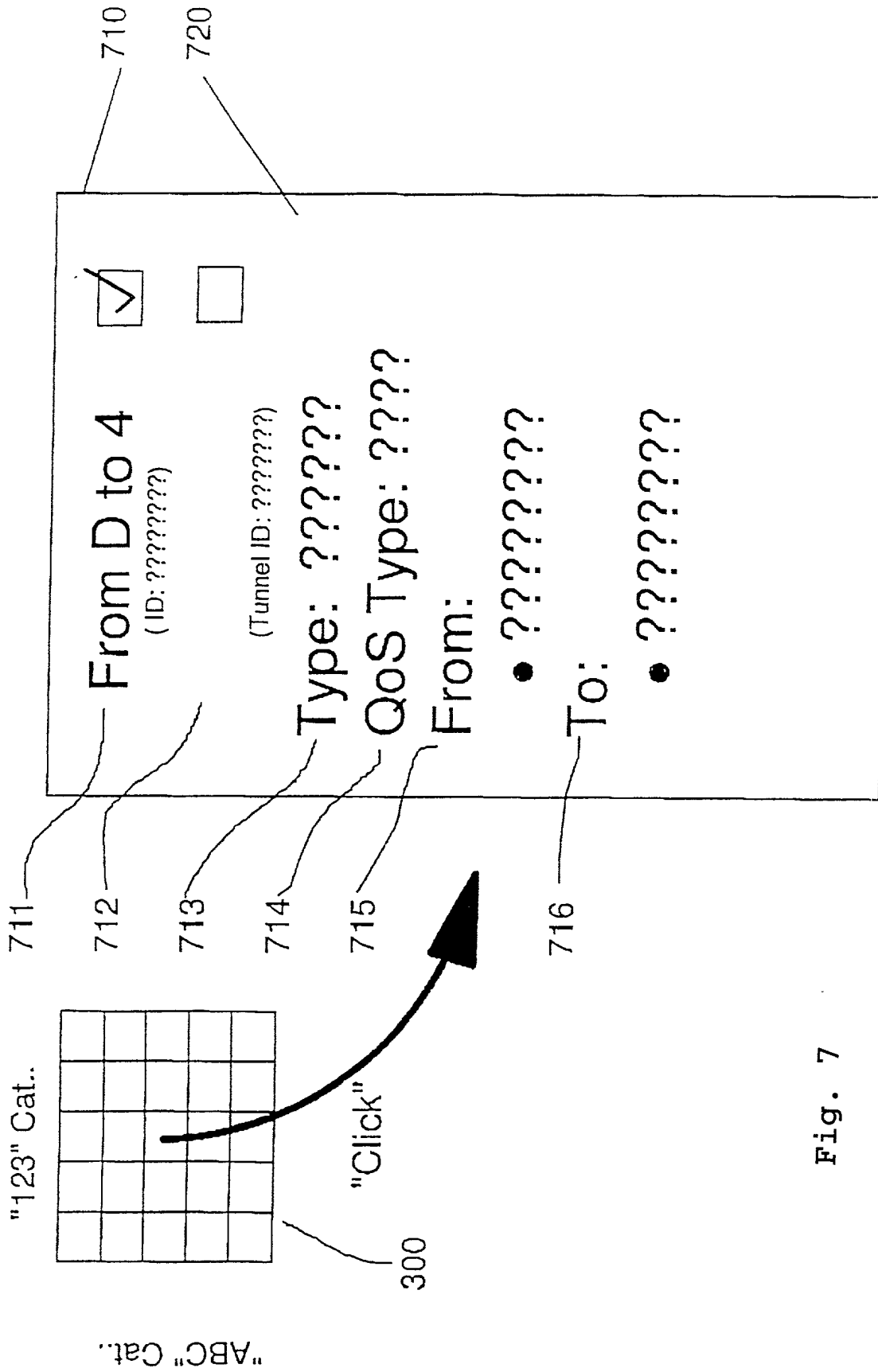


Fig. 7

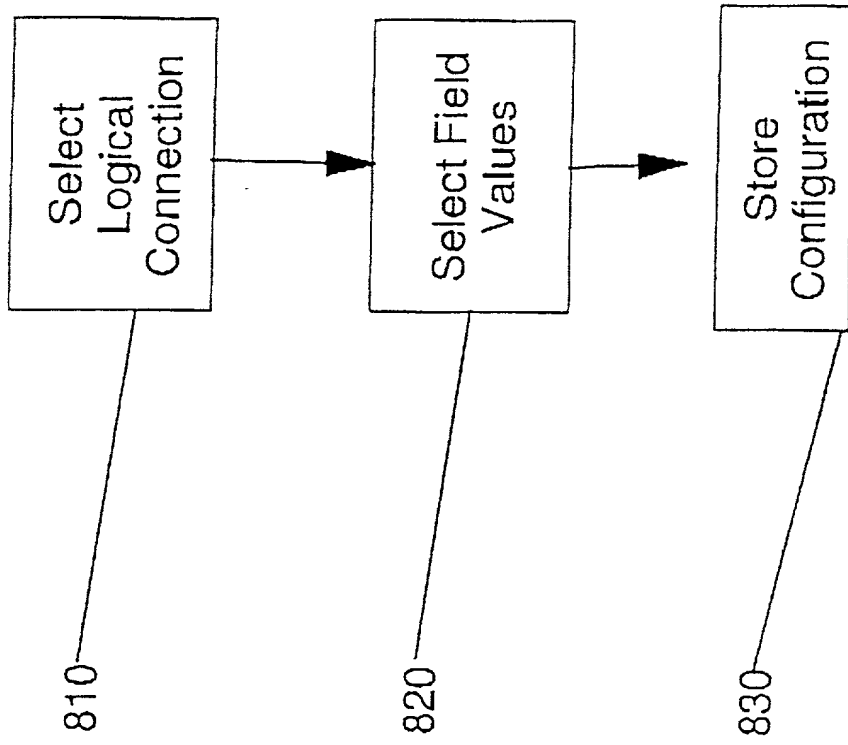


Fig. 8

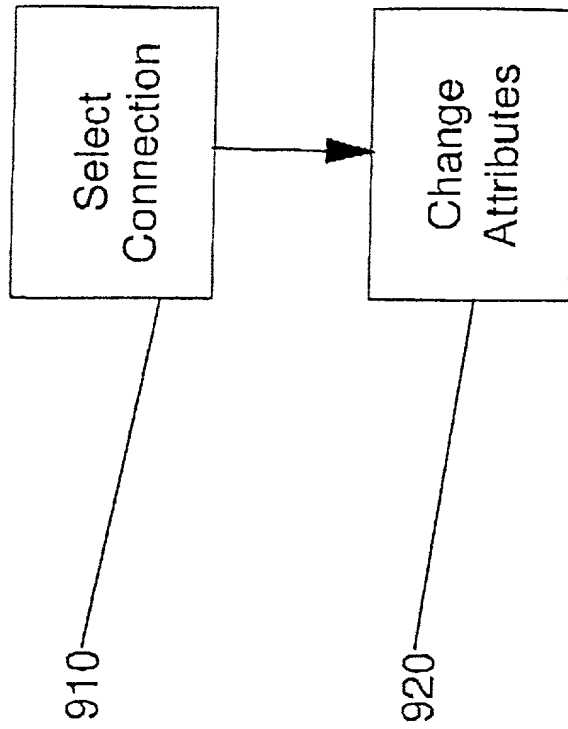


Fig. 9

Variable	Mean	SD	Min	Max
Age	34.5	10.2	21	55
Gender	Male	10.5	0	21
Marital status	Married	15.2	0	21
Education	High school	12.1	0	21
Occupation	Unemployed	18.3	0	21
Income	Low	14.7	0	21
Health status	Good	16.8	0	21
Stress level	High	19.4	0	21
Life satisfaction	Low	13.9	0	21
Resilience	Low	15.6	0	21
Optimism	Low	14.2	0	21
Self-efficacy	Low	13.5	0	21
Hope	Low	14.8	0	21
Positive affect	Low	13.1	0	21
Negative affect	High	17.2	0	21
Emotional stability	Low	14.3	0	21
Neuroticism	High	18.7	0	21
Extraversion	Low	13.8	0	21
Agreeableness	Low	14.1	0	21
Conscientiousness	Low	13.6	0	21
Openness	Low	13.4	0	21
Intelligence	Low	13.2	0	21
Memory	Low	13.0	0	21
Attention	Low	12.9	0	21
Processing speed	Low	12.8	0	21
Verbal ability	Low	12.7	0	21
Nonverbal ability	Low	12.6	0	21
Fluid intelligence	Low	12.5	0	21
Crystalline intelligence	Low	12.4	0	21
Executive function	Low	12.3	0	21
Working memory	Low	12.2	0	21
Attention span	Low	12.1	0	21
Impulsivity	High	17.1	0	21
Emotional lability	High	17.0	0	21
Sensitivity to stress	High	16.9	0	21
Recovery from stress	Low	12.0	0	21
Resilience (repeated)	Low	11.9	0	21
Optimism (repeated)	Low	11.8	0	21
Self-efficacy (repeated)	Low	11.7	0	21
Hope (repeated)	Low	11.6	0	21
Positive affect (repeated)	Low	11.5	0	21
Negative affect (repeated)	High	16.8	0	21
Emotional stability (repeated)	Low	11.4	0	21
Neuroticism (repeated)	High	16.7	0	21
Extraversion (repeated)	Low	11.3	0	21
Agreeableness (repeated)	Low	11.2	0	21
Conscientiousness (repeated)	Low	11.1	0	21
Openness (repeated)	Low	11.0	0	21
Intelligence (repeated)	Low	10.9	0	21
Memory (repeated)	Low	10.8	0	21
Attention (repeated)	Low	10.7	0	21
Processing speed (repeated)	Low	10.6	0	21
Verbal ability (repeated)	Low	10.5	0	21
Nonverbal ability (repeated)	Low	10.4	0	21
Fluid intelligence (repeated)	Low	10.3	0	21
Crystalline intelligence (repeated)	Low	10.2	0	21
Executive function (repeated)	Low	10.1	0	21
Working memory (repeated)	Low	10.0	0	21
Attention span (repeated)	Low	9.9	0	21
Impulsivity (repeated)	High	16.6	0	21
Emotional lability (repeated)	High	16.5	0	21
Sensitivity to stress (repeated)	High	16.4	0	21
Recovery from stress (repeated)	Low	9.8	0	21

"123" Catalog of Endpoints

300

ii
ii
ii

1050

013

"ABC"

Catalog

100

40

100

points

Fig. 10

	Endpoint 1	Endpoint 2	Endpoint 3	Endpoint 4	Endpoint 5	Endpoint 6	Endpoint 7
Endpoint A	1040						
Endpoint B		1030					
Endpoint C			1030				
Endpoint D				1030			
Endpoint E					1030		
Endpoint F						1030	
Endpoint G							1020

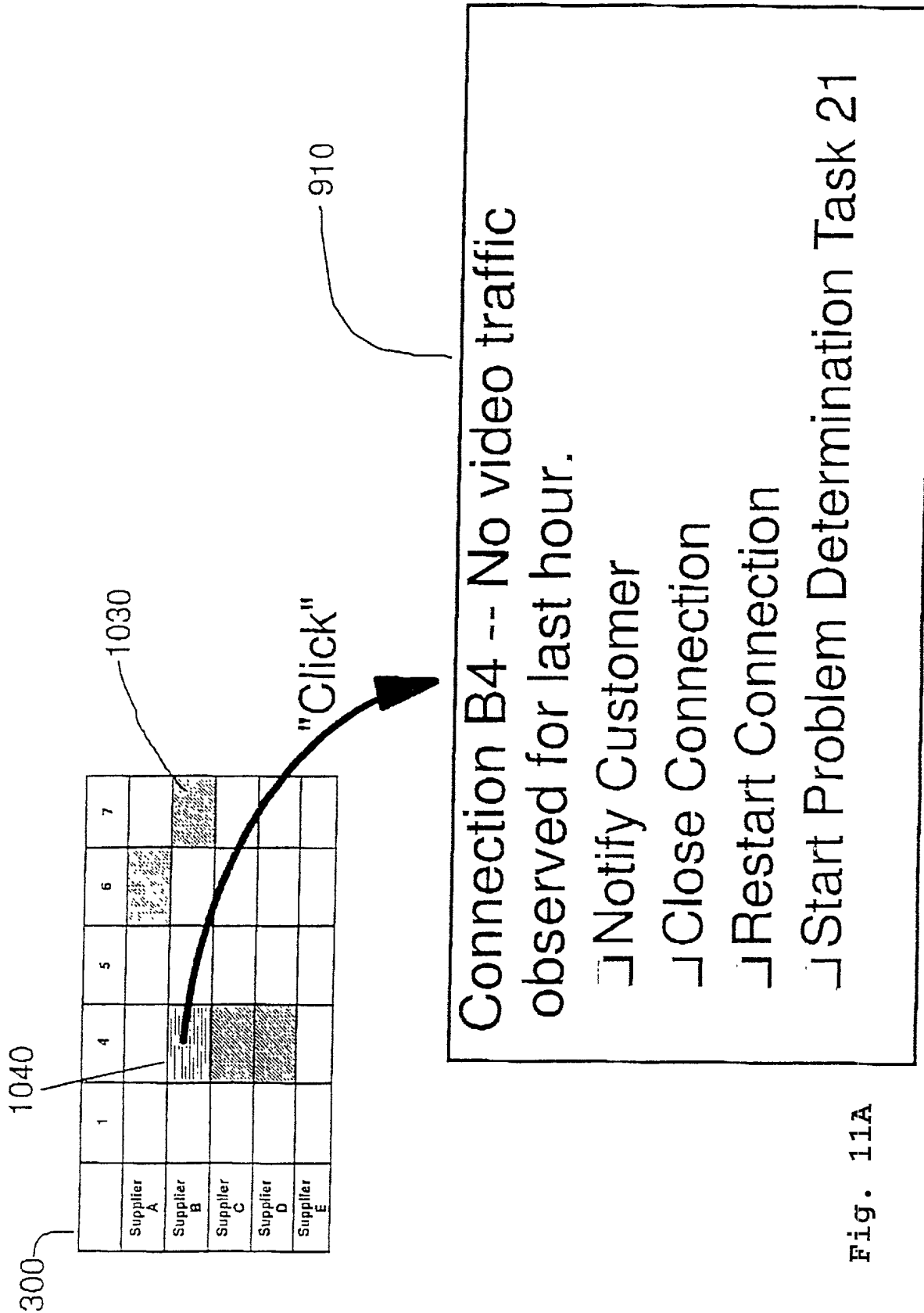
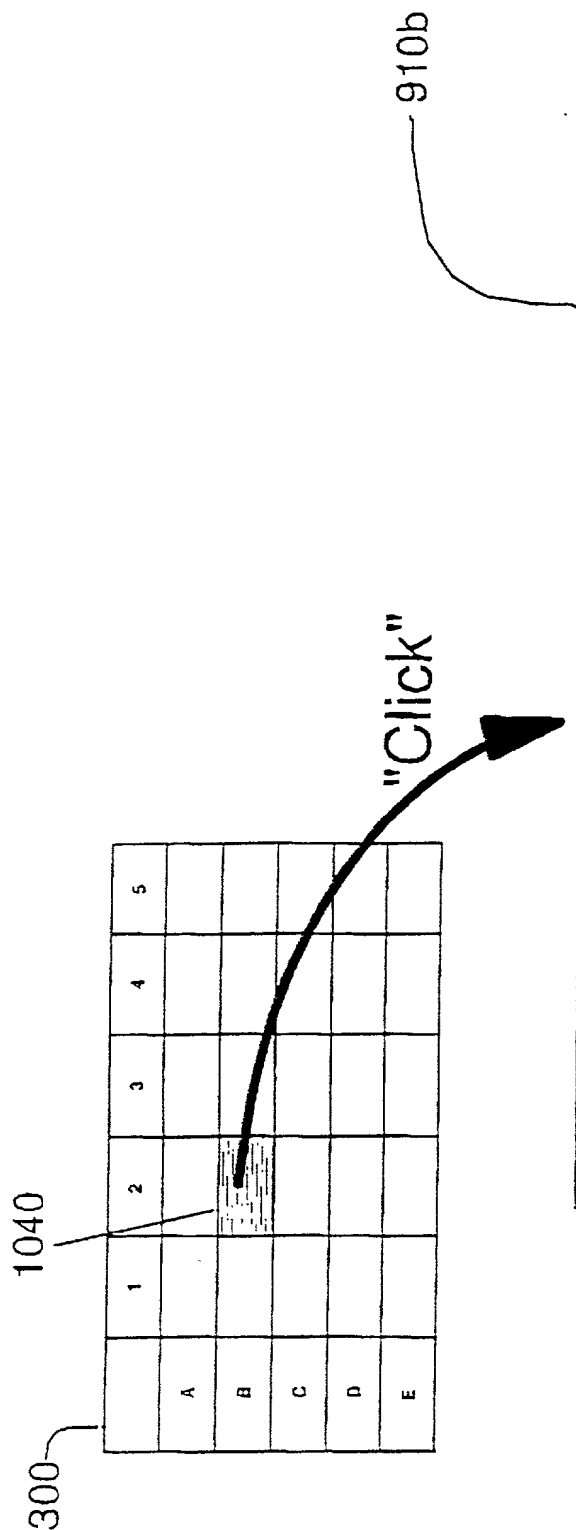


Fig. 11A



Connection B4 -- Viewing pattern: 48% Sports, 22% Comedy, 30% Other

- └ Increase amount of targeted sport commercials by 20%
- └ Decrease amount of targeted sports commercials by 20%.

Fig. 11B

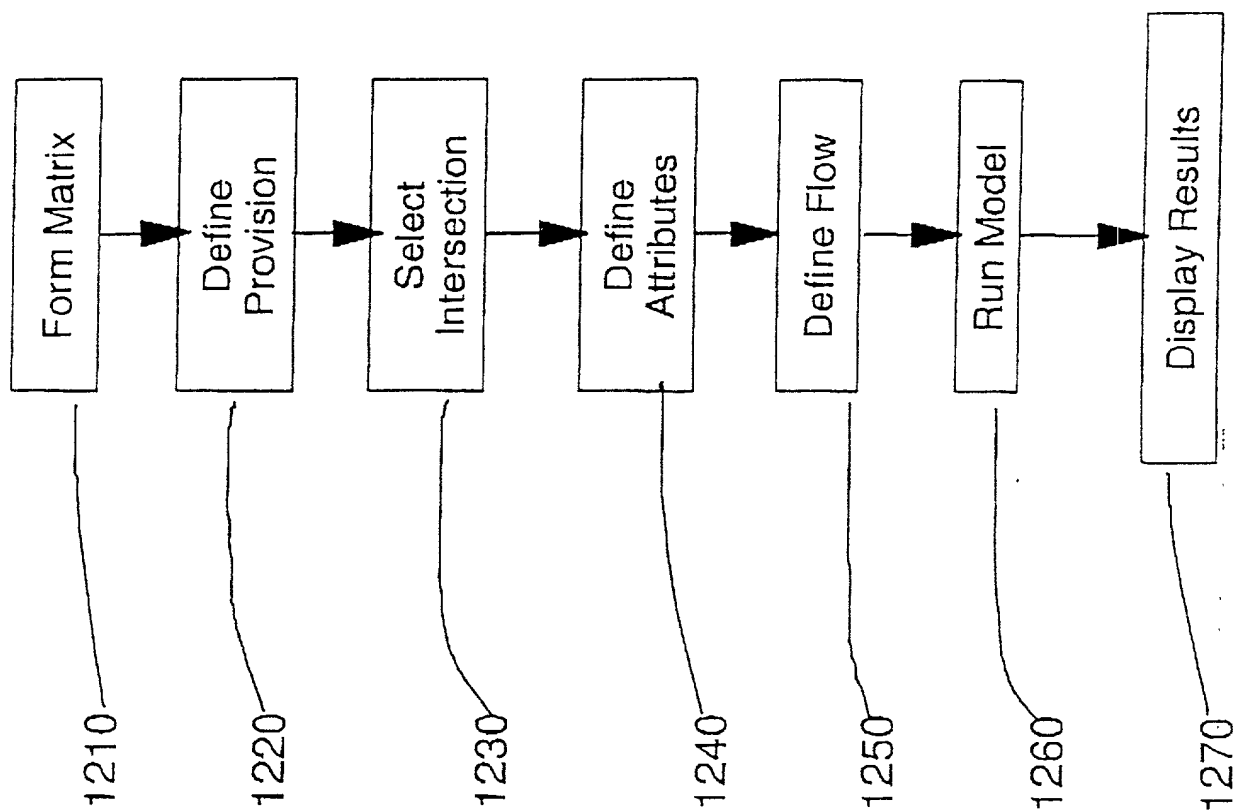


Fig. 12

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: VIDEO ON DEMAND CONFIGURING, CONTROLLING AND MAINTAINING

the specification of which (check one)

☒ is attached hereto.

_____ was filed on _____ as United States Application Number _____
or PCT International Application Number _____
and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application, having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)	Priority Claimed
(Number) _____ (Country) _____ (Day/Month/Year Filed) _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
(Number) _____ (Country) _____ (Day/Month/Year Filed) _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
(Number) _____ (Country) _____ (Day/Month/Year Filed) _____	<input type="checkbox"/> Yes <input type="checkbox"/> No

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

60/138,172 (Application Number)	June 8, 1999 (Filing Date)
_____ (Application Number)	_____ (Filing Date)

I hereby claim the benefit under 35 U.S.C. §120 of any United States Application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States, or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information material to the patentability of this application as defined in 37 CFR §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.) _____	(Filing Date) _____	(Status) (patented, pending, abandoned) _____
(Application Serial No.) _____	(Filing Date) _____	(Status) (patented, pending, abandoned) _____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number).

Manny W. Schecter (Reg. 31,722), Lauren C. Bruzzone (Reg. No. 35,802), Christopher A. Hughes (Reg. 26,914), Edward A. Pennington (Reg. 32,588), John E. Hoel (Reg. 26,279), Joseph C. Redmond, Jr. (Reg. 18,753), Douglas W. Cameron (Reg. No. 31,596), Wayne L. Ellenbogen (Reg. No. 43,602), Stephen C. Kaufman (Reg. No. 29,551), Daniel P. Morris (Reg. No. 32,053), Louis J. Percello (Reg. No. 33,206), Jay P. Sbrollini (Reg. No. 36,266), David M. Shofi (Reg. No. 39,835), Robert M. Trepp (Reg. No. 25,933), Paul J. Otterstedt (Reg. No. 37,411) and Louis P. Herzberg (Reg. No. 41,500).

JUN-08-2000 12:58

SCULLY SCOTT

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P.03/26

SSM&P Docket No.:YOR9-2000-0348US1
IBM Docket No.: 13668DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATIONSend correspondence to: Richard L. Catania, Scully, Scott, Murphy & Presser400 Garden City Plaza, Garden City, New York 11530Direct Telephone Calls to: (name and telephone number) Richard L. Catania, (516) 742-4363Louis Paul Herzberg

Full name of sole or first inventor

Inventor's Signature

Date

3 Cloverdale Lane, Monsey, New York 10952
ResidenceUnited States of America
CitizenshipSame as residence
Post Office AddressCharles Steven Lingafelt

Full name of second joint inventor, if any

Inventor's signature

Date

4830 Highgate Drive, Durham, North Carolina 27713
ResidenceUnited States of America
CitizenshipSame as residence
Post Office Address

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the specification of which (check one)

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(Number)	(Country)	(Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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_____	_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
_____	_____	_____
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
_____	_____	_____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

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SSM&P Docket No.: YOR9-2000-0348US1
IBM Docket No.: 13668DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATIONSend Correspondence to: Richard L. Catania, Scully, Scott, Murphy & Preasor400 Garden City Plaza, Garden City, New York 11530Direct Telephone Calls to: (name and telephone number) Richard L. Catania, (516) 742-4343Louis Paul Herzberg

Full name of sole or first inventor

Inventor's Signature

Date

3 Cloverdale Lane, Moncey, New York 10952

Residence

United States of America

Citizenship

Same as residence

Post Office Address

Charles Steven Lingafelt

Full name of second joint inventor, if any

Inventor's signature

Date

4830 Highgate Drive, Durham, North Carolina 27713

Residence

United States of America

Citizenship

Same as residence

Post Office Address

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Louis P. Herzberg, Docket: 13668 (YOR9-2000-0348US1)
et al.

Serial No.: Unassigned

Dated:

Filed: Herewith

For: VIDEO ON DEMAND CONFIGURING,
CONTROLLING AND MAINTAINING

Assistant Commissioner for Patents
Washington, DC 20231

ASSOCIATE POWER OF ATTORNEY AND
REQUEST FOR CHANGE OF MAILING ADDRESS

Sir:

Applicants, by their attorneys of record, hereby grant
an Associate Power of Attorney to:

RICHARD L. CATANIA, Reg. No. 32,608; FRANK S. DIGIGLIO, Reg.
31,346; KENNETH L. KING, Reg. No. 24,223; STEPHEN D. MURPHY,
Reg. No. 22,002; LEOPOLD PRESSER, Reg. No. 19,827; and JOHN S.
SENSNY, Reg. No. 28,757

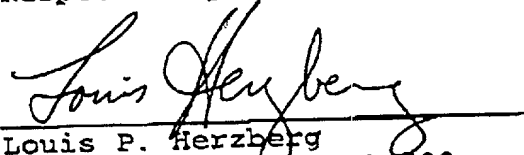
with full power of substitution to prosecute this application
and transact all business in the United States Patent and
Trademark Office in connection therewith.

Applicants further request that all future
correspondence in connection with this application be directed
and addressed to:

RICHARD L. CATANIA, ESQ.
SCULLY, SCOTT, MURPHY AND PRESSER
400 Garden City Plaza
Garden City, New York 11530

Direct all telephone calls to: (516) 742-4343.

Respectfully submitted,



Louis P. Herzberg
Registration No.: 41,500
Telephone No.: (914) 945-2509

IBM Corporation
T.J. Watson Research Center
Route 134/Kitchawan Road
P.O. Box 218
Yorktown Heights, New York 10598
JSS/gc